

Water for All Time

Mangel Cora Well - Lago's Timeless Contribution to Aruba's Future is a 2134 Foot Tunnel under the Coral

One thousand years from today, conditions may be entirely changed in Aruba. The seacoast may be shaped differently; the roads, the houses, the buildings may all be new. If, for instance, the oil resources of Venezuela are exhausted by that far-distant time, the importance of Lago to Aruba may be just a memory. But the people will still be getting water from Mangel Cora well.

In terms of centuries, Mangel Cora is the most permanent improvement Lago has given to Aruba. No matter what the economy of the island, fresh water is vital to Aruba. And the construction of the well will provide a never-ending source of fresh water..... so long as it continues to rain.

Much of the rain that falls on Aruba runs into the sea. In a few places, because of the natural formation of the land, it is trapped by hard layers of rock under the coral and held temporarily in storage. Probably the largest of these developed natural "reservoirs" is found near Colorado Point at the east end of the island.

To the average person the ground in this section looks like land anywhere else in Aruba. When rain falls, it quickly soaks into the porous coral and disappears. But there is a difference!

Deep under the coral from Colorado Point to the commissary are large layers of granite rock forming a huge basin about a mile long and a mile wide. The area works just like a sponge on a dinner plate.the coral collects water like a sponge... the granite keeps the water from flowing into the sea too quickly. Lago engineers estimate that the formation collects rain water from a square mile and can hold more than 2,500,000 barrels of fresh water.

Before the dawn of history natural springs existed in this basin area. These springs were overflowing during the rainy seasons, but were probably dry during other parts of the year.

As civilization came to Aruba, these springs were used and improved upon by digging wells. And in early Aruban times, windmill pumps were installed to get the water out of the ground.

Ten of these windmill wells were in oper-

ation in the "Mangel Cora basin" area when Lago first arrived. (This area is bounded by Colorado Point, the hospital, hospital road, colony commissary, the Community Church, and the lagoons.)

When the refinery was being built, more fresh water was needed than the windmill pumps could supply. (The output of all the wells was collected by a small piping system and delivered through a single steel line to the old stone reservoir near the present M & C shops.)

Mangel Cora well (one of the ten) had proved to be the only consistent producer of acceptable water. But it could not produce enough. When too much water was drawn out, sea water flowed into the well. Except after heavy rains, the average sample was about one third sea-water.

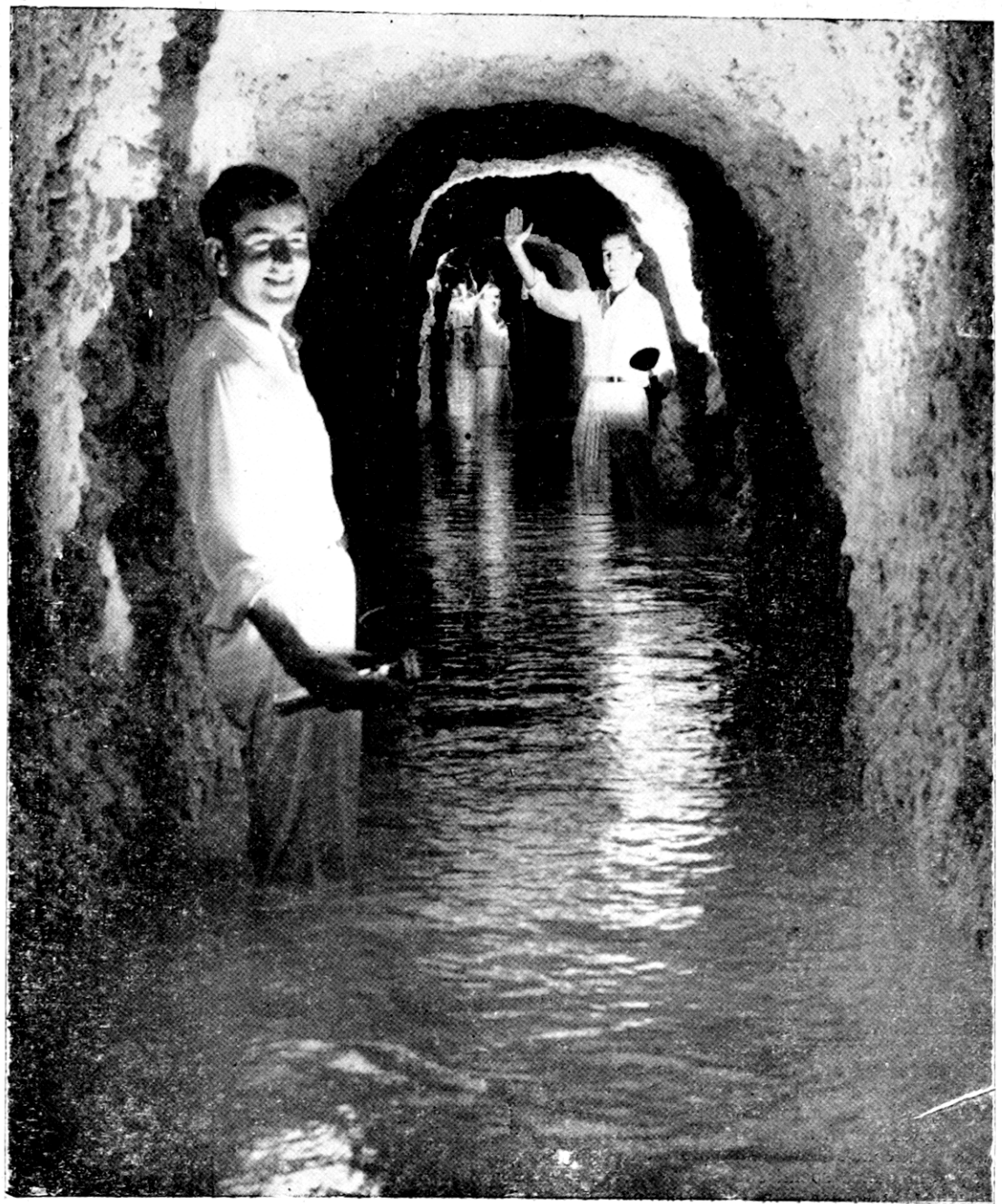
Several methods were used to improve this well, and over the years have boosted its supply of fresh water from 1000 barrels or less to more than 5000 barrels a day. And the improvements are permanent. Mangel Cora will yield water for Aruba indefinitely.

Lago used the same methods which worked well in Europe, Southern California and other states, the Hawaiian Islands, and other Pacific islands. One of these is the "skimming" tunnel which runs out from the bottom of the well under the ground at sea level. This increases the area that water can be pumped from, and acts like many wells instead of just one.

By the end of 1930, all the ten wells except the Mangel Cora were abandoned. The present pump station had been built, and a 200 foot water-collecting tunnel was in service. This tunnel has been extended through the years until now it runs nearly half a mile under the coral.

Early in the work it was found practical to drill holes and pump a concrete mixture into the coral to form an underground dam or "grout line" between the tunnel and the ocean. The concrete helps to fill the holes in the porous coral and act as a barrier to water seepage from the basin to the sea.

The average height of the tunnel is about 7 feet, 6 inches; the average width, 4 feet, 6 inches. Warm water (from 80 to 90 de-

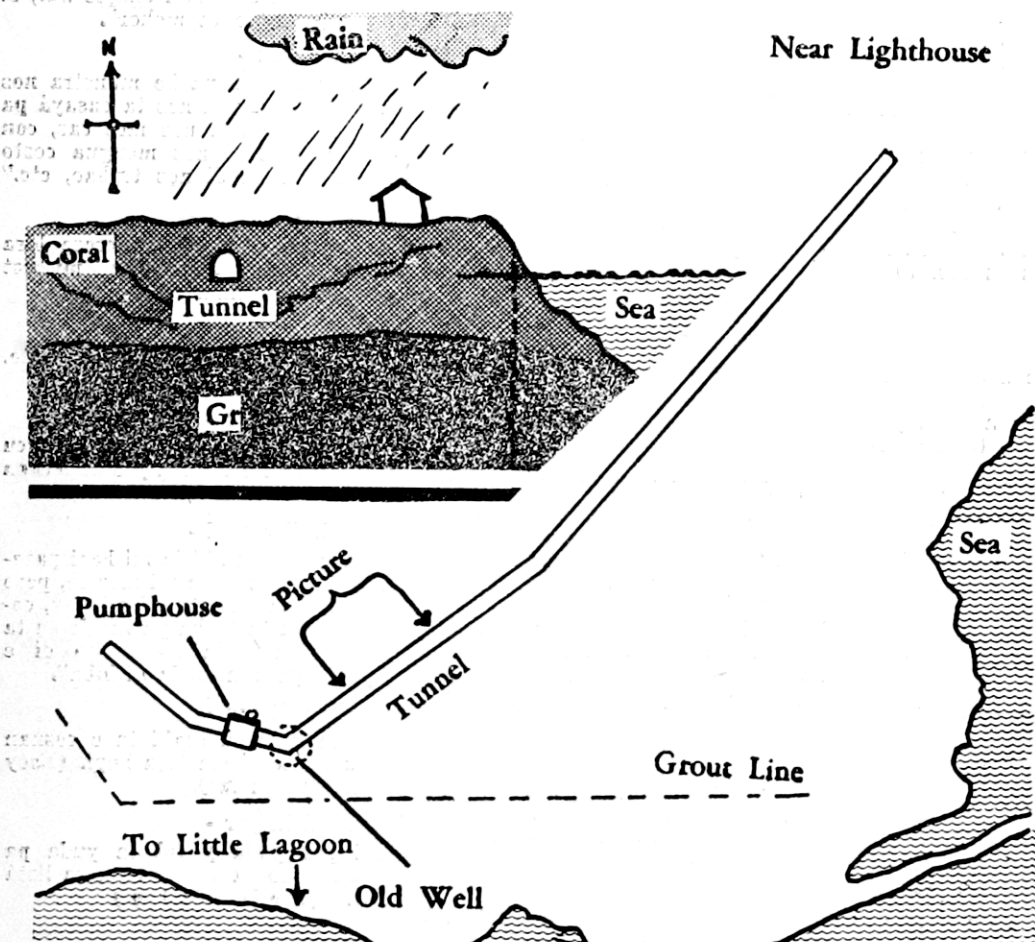


This is the first picture ever made in the blackness of the Mangel Cora tunnel. Esso News photographer Tom Boylan took six pictures of himself on one film by setting his camera on

a tripod in the water and opening the shutter. He then waded through the tunnel, shooting a hand-held flashgun at various intervals to illuminate a 250 foot stretch.

Esaki ta promer portret trahá den scuridá di un Mangel Cora Tunnel. Fotógrafo di Esso News Tom Boylan a saca seis portret di su mes riba un film door di pone su kodak riba

un tripod den awa na habrida di e shutter. Despues e a camna door di e tunnel, usando un flashgun tené na man na varios intervalo pa luza un caminda di 250 pia.



Two diagrams show the layout of the Mangel Cora Well. The bottom drawing is a map showing how the tunnel runs from a point near the little lagoon to a point near the lighthouse on Colorado Point. Top left: cross-section view of the tunnel shows how rainfall is soaked up by the coral and held above the granite. The tunnel runs through the coral at sea-level and collects fresh water from the coral formation.

Dos diagram nan ta muntra con e tunnel ta traha. E pintura abao ta un mapa cu ta muntra con e tunnel ta core for un punta serca e Lagoen chikitu banda di vuurtoren na Colorado Point. Ariba-robos: doorsnee vista di e tunnel ta muntra con awa seru ta sippel door di e coral y tene ariba di e graniet. E tunnel ta core door di e coral na lamar y ta colecta awa fresco cual ta forsa ariba door di presión di lamar abao.

greer) fills the tunnel a little higher than knee level. The floor of the tunnel is rough and uneven; the walls are yellow-white coral. Lago engineers who check the Mangel Cora well at regular intervals belong to the brotherhood of "Moles", for there are no lights except for air shafts about every 200 feet.

All of the work on Mangel Cora well isn't done "in the dark" however. A great deal has been learned about the formation of the land in the area through testing and exploratory drilling.

Today more exploratory drilling is going on north of the tunnel. Old wells and mines

are being opened; test wells are being drilled. This will give more facts about the location of the granite rock, the thickness of the coral, and the quality of the ground water in that section.

The Mangel Cora ground water system may then be extended to tap even more sources of water. But whether or not additional ground water is found, the present tunnel is a permanent contribution to Aruba's welfare. For a great many years in the future it will be used to collect vital fresh rain water for the island.

Awa Pa Tur Tempo

Mil anja for di awe condicion di Aruba por ta completamente cambia. Costa di lamar por ta diferente, camindanan, casnan, edificionan por ta tur nobo. Si por ehempel zeta di Venezuela caba pa e tempo ey, importancia di Lago na Aruba lo por ta solamente un memoria. Pero ainda, despues di tur e anjanan, ainda hendenan por queda haci uso di e poz di Mangel Cora.

Den termino di siglonan, Mangel Cora ta un adelanto di mas permanente cu Lago a duna Aruba. Maske com grandi economia di e isla ta, awa fresco ta un necesidad na Aruba. Y construccion di e poos ey lo percura pa awa dushi sin fin..... tantem cu sigui yobe.

Masha tanto di e awa cu ta yobe na Aruba ta corre bai lamar. Na algun lugar, pa motibo di formacion natural di e tera, e awa ta worde teni pa un laag duru di baranca bao di e koraal y e ta keda ey temporalmente.

Probablemente e lugar unda cu e barranca ta vantage mas awa ta banda di Ceroe Colorado, banda p'ariba di e isla.

Pa un cu no sa e tera den e region aki no ta parece diferente for di ningun otro parti di Aruba. Ora awa yobe e ta chupa bai den porionan di e koraal y e ta disparce. Pero tin un diferencia! Hundo bao di e koraal di Serroe Colorado te na Comisario tin un laag grandi di piedra di graniet cu ta cubri un distancia di un milla hanchu y un milla largo. Es graniet ey ta traha mescos cu un spons den un tayo... e koraal ta colecta awa ma-

nera un spons... y e graniet ta tene e awa, strobé di corre bai lamar. Ingenieronan di Lago ta kere cu es formacion di graniet ta colecta awa fresco over di un distancia di un milla cuadrá y cu e por contene mas di 2,500,000 barril di awa dushi.

E fuente natural aki tabata existi den e region aki ya ta siglos. E lugar aki tabata yen yen durante tempo di yobida, pero probablemente lo e tabata secu durante otro tempo di anja.

Despues di tempo e bron aki a worde usa y mehora cobando poosnan. Y mas despues mulinan a worde instala pa saka awa for di tera.

Tempo cu nan a traha refinaria mas awa dushi tabata worde usa cu e pompan por a duna.

Poos di Mangel Cora (un di e 10-nan) a proba di ser e unico cu tabata produci awa aceptable continuamente. Pero toch e no por a produci suficiente. Ora demasiado hopi awa tabata worde saca, awa di lamar tabata dren-ta e poos. Cu excepcion di temponan di hopi yobida, e awa tabata 1/3 parti awa di lamar.

Diferente metodo a worde usa pa mehora e poos aki, y despues di anjanan nan a bin haya awa dushi na un cantidad di 1000 te mas o menos 5000 barril pa dia. Y e mehoria tabata permanente. Mangel Cora lo sigui duna Aruba awa indefinitivamente.

(Continúa na pagina 5)

Awa Pa Tur Tempo

(Continuá di pagina. 4)

Lago a usa e mes metodonan cu a proba di tin exito na Europa, Sur di California y otro estadonan, islanan di Hawaii y diferente otro islanan den Pacifico.

Un di esaki nan ta un tunnel cu ta core foi bao di e poos bao di tera te na nivel di lamar. Esaki ta aumenta e area cu awa por worde geprompt y asina e por traha manera hopi poos, na lugar di un so.

Pa fin di 1930 tur e 10 posnan cu excepción di M.C. tabata abandoná. E pomp station a worde trahá y 200 pia di un tunnel cu ta colectá awa a dreña servicio. E tunnel aki a worde extende durante añanan te cu e ta core casi mei mijl bao di e coral awor.

Den principio e trabao aki a haya practice pa haci buraco y pomp un mescla di concreet den e coral pa forma un dam bao di suela of un "grout line" meimei di e tunnel y oceano.

Concreet a yuda yena e buraconan den e coral poroso y ta actual (traha) manera un slagboom pa awa sippel foi di e forma na lamar.

E averia altura di e tunnel ta mas o menos 7 pia, 6 duim e han-

chura ta mas o menos 4 pia, 6 duim.

Awa cayente (di 80° te 90 grado ta yena e tunnel un poco mas haltu cu moel di rodia. Suela di e tunnel ta brutu y no igual; e murayanan ta di coral color blancu geel. Ingenieronan di Lago cu ta check M.C. na intervalo regular, ta pertenecé na e fraternidad di "Moles" (un animal cu ta biba bao di tera y no por weta den luz) pasobra no tin luz sino esun poco cu ta dreña door e tubonan di aire cada 200 pia mas o menos.

Tur trabao di M.C. ta worde haci "den scuridad; sinembargo. Un gran cantidad a worde siñá tocante e formacion di area di tera door testamento y boramento exploratorio.

Awe ainda mas boramento ta worde haci na noord di e tunnel. Poos bieu y mina ta worde habrí; poos pa prueba ta borá. Esaki lo duna mas prueba riba locación di rots di graniet, hanchura di coral y e calidad di awa di suela den e parti ei.

E sistema di awa di M.C. lo worde extende pa tap mas bron di awa. Pero si nan haya adicional tera di awa of no, e tunnel presente lo ta un contribucion pa bienestar di Aruba. Pa un gran cantidad di año den futuro lo e worde usá pa colecta awa fresco pa e isla.